

CONTEXT: Interviews conducted as part of an investigation into the barriers to, and opportunities for, achieving Circular Synthetics. Research was funded by Business of Fashion, Textiles and Technology Creative Research & Development Partnership (BFTT CRDP—£5.5 million) led by the University of the Arts London, part of the UK Creative Industries Clusters Programme (CICP) funded by the Industrial Strategy Challenge Fund, and delivered by the Arts and Humanities Research Council (AHRC) on behalf of UK Research and Innovation.

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Interviewee: Waste mapping consultant

**1: Interviewer**

**2: Interviewee**

**1:** Could tell me a bit more about the background of [redacted] and your role within the company, that would be fantastic.

**2:** Sure. [redacted] is a consultancy that's focused very much on textile waste and recycling. I started the company in 2013 when I was living in the United States. I did a lot of exploration. I joke about giving myself a master's degree in dirty laundry, and at this point, it's probably a PhD in circular textiles or something. Not anything official, of course, but a lot of hands-on work and research.

Again, starting very much around post-consumer textiles, what is the ways to pass it, where does it go, what are the opportunities and some deep digging into, at that time, the existing and developing recycling technologies, both mechanical and chemical, to handle these types of waste, so specifically post-consumer stuff. I did that for about three years and then I got a job with [redacted]. I just rolled that experience forward into that role.

I worked with them for two years and then when my employment contract ended there, I decided to stay here in the Netherlands and open-- call it an arm, but essentially, [redacted] in Europe. It's actually a separate entity. It doesn't really matter for this, but doing the same work. Mapping the waste, post-consumer and post-industrial. I'm doing a project at the moment on the US side with a group called [redacted]. My role there is the textile waste research, post-industrial and post-consumer waste and infrastructural research there. Consistently that's what I do.

Like I said, a lot of waste mapping and working with companies, individual companies or consortia. A lot of consortia work these days, to understand what the waste looks like, what the opportunities for it are, how it fits into the recycling landscape. The thing that's fascinating me and I'm trying to continue to bring into the work now more frequently, is a level of standardization of, call it, waste grades, if you like, or recycling grades, if you like, and then, a better understanding of how wastes format, meaning is it clippings, is it garments, what is it? Is it in your own homes? How does format as well as fiber content and geography all overlay to create circular materials flows.

Interview date: 09 06 2020

**1:** That sounds really interesting. Your business in a sense is in a direct response ready to this lack of information, knowledge about waste, which is one of the major barriers to reusing it.

**2:** Yes. I'm obsessed with waste and recycling technologies because it's also very much about the technology side. That's not to say that I believe circularity is only about recycling. It's obviously much, much larger than that. But the value that I bring to a circular textile system is that understanding a waste recycling and the ability to start to link it to the human side, to link it to the environmental side, to link it to not just recycling what exists but really understanding how do we change the amount of resources that flow through the system to balance the waste out, to take it out, because eliminating waste is such a core principle to circularity in general.

We're throwing away, depending on whose numbers you listen to, 80% or better of everything that starts with the consumer. That doesn't sound very much like balanced to me. I think if we address, if we really understand what's in the waste, really understand the problems and the leakage of resources from the system, then we can re-balance the system.

**1:** That makes perfect sense and such a good goal to have. The formats and the standards that you're coming up with, are they tools for your consultancy? Are they something which can become much more of a universal language, if you like?

**2:** The goal is to make them more of a universal language. I've got drafts that we've been working on internally, just to wrap your head around the problem, so to say. There will be a version that comes out publicly as part of the [redacted] Project. I'm also working with one [redacted] project we found out that has been funded. We'll work it into that, to some degree. We're in stage-two proposal for another [redacted] project, and the goal is to work it into. It would be silly for me to think that-- No, it's not the right way to say that. It would be crazy to hold onto that. That's information that doesn't benefit a single person, it should be shared and contributed to and maybe not take on a life of its own but be widely available for comment, for update, for usage. That's the long-term goal with a lot of what I do, it's how can we really get this information out so that we can all step forward a bit faster.

**1:** What has your experience been of dealing with synthetics specifically in the work that you've done with waste?

**2:** That's a good question. Again, sometimes that is geography dependent but when it comes to the post-consumer side there are a couple of pieces to consider. It is rare to find pure polyester in a post-consumer waste stream. It's usually blended with something else. Cotton spandex, elastane- something like this. That's what a lot of people don't understand when they look at global fiber consumption, polyester is 55% or something of global fiber consumption. But on the post-consumer side it does not appear that way, it appears as, like said blended.

For that reason and a few others, what happens is a couple of things. When you look at the ability to recycle post-consumer textiles through chemical recycling technologies that are only compatible with high percentages of polyester, meaning, can't do poly cotton blends, that sort of thing or not designed to do poly cotton blends

beyond a certain threshold. There's much less polyester heavy post-consumer textile than you would think.

The other interesting thing about the post-consumer side is that, if you know anything about the way collected post-consumer textiles flow, they're sorted for reuse first and then the next tier below reuse is the wiper market and then go down into shoddy and down a bit. The textile recycling feedstocks fall somewhere between where reuse ends and where the trash bin begins.

The challenge for highly polyester materials in the post-consumer stream is that they do not make good wiping rag and so they have very little utility, or value or in many cases negative value in the post-consumer waste stream if it's a really polyester heavy-- more than 50% polyester material. Really, the only good opportunity for that stuff is shoddy. Shoddy has limited markets. I don't know if you know that, sorry. Do you know shoddy?

**1:** Yes.

**2:** Okay. Limited markets for shoddy and polyester creates a problem in there. Also the blend of spandex in that material makes it a little bit trickier for shoddy as well because then it can pleat up the equipment. Too much elastane can pleat up the equipment.

**1:** Sorry, go on.

**2:** From a post-consumer standpoint, there's that. From a post-industrial standpoint-- this is more assumption based on less actual knowledge, that's an area that I'm actively researching at the moment. I think, from what I've learned with the post-industrial side is that it's still not easy to move post-industrial polyester into the recycling stream. If it's pure or if it's a known source, there are now big recyclers that will take it. Unify, for example, is a large North American producer, polyester and recycled polyester. If they can validate what's in a post-industrial source they will absolutely buy it or absolutely bring it in and recycle it.

Recycling polyester, once it's turned into fiber, is tricky. It's not as easy to do with the melt process so I understand. If it has any treatments on it and potentially dye stuff and that stuff, yes, it also becomes less and less compatible for recycling.

**1:** Sorry, just to pick up a point on that. Unify, it's a melt process that they use to convert polyester or to reuse polyester.

**2:** Their bottle flake, historically, yes. I have heard both ways that there is a chemical recycling technology and development and that they just use a melt process, so that would be a fact to verify.

**1:** Okay. They're in the States, it doesn't make sense to ship polyester from around the world, so I guess it has to be production waste in the US, that they would validate and take, not from China.

**2:** Yes. You would think but it all depends on the economics. I know from a cotton perspective, there is enough market for post-industrial cotton clippings to move it

Interview date: 09 06 2020

from the US to India for mechanical recycling. Polyester, I don't know that there's quite the same business case. Carpet, for example, can take recycled polyester, whether fiber inputs are compatible with carpet recycling processes or not, I think it really depends on the process.

Just to look at it from a higher level, I think the recyclability of post-industrial polyester depends on the level of purity, it depends on the volume available, it depends on the individual recycling technology itself and always the economics. Even things like hardness of the fiber can impact-- this is something that I found absolutely fascinating. Hardness of the fiber can impact how recyclable it is.

**1:** Do you mean the tenacity?

**2:** Yes, I think so.

**1:** Okay.

**2:** I think that's what [redacted] says. I don't know if you've read any of the reports that GreenBlue did?

**1:** I was going to mention that actually. I have. Yes.

**2:** James Ewell who put those-- well, I imagine the most recent ones that you've got are the same as the ones that I've got, but James put those together and they're great. There's also a close loop fund or close loop partners, I don't remember which firm that did it. They have another report, I think that James worked on as well, around circular plastics, so not just textile, specifically plastics in general.

I think, for textiles, if we think about circular synthetics, I think it's really important to also acknowledge what's happening in the packaging industry and the market dynamics that are being seen or have been seen from the commitments that packaging producers are making with recycled content,, the amount of bottles that are collected and available and what that does to the price for recycled fibers from bottle flake, and what does that mean for textile waste as an input.

All of those sorts of things I find really, really fascinating and I don't think anybody has a good handle on or answer to what's going to happen to the recycled polyester textile market.

**1:** That's really interesting. I was going to mention what I was thinking while you were talking about what's happening in the States. I was thinking about the GreenBlue report because they take a very regional approach and that's something that you've already mentioned, is that it's geography dependent and very much case by case. When you look at the regions, what can be collected and what type of materials are available.

**2:** Yes. Salvage is always region dependent. Because the logistics impact the economics so much. Something like cotton, you can move it. It's crazy but you can literally move it halfway around the world if the market conditions are right. Doesn't do the margins on the finished product any real benefits, but in some cases, it's still economically viable. Most of the time in wastes and salvage you have to be aware of

Interview date: 09 06 2020

the geography. Especially the low-value stuff. When you're talking about recycling inputs, it's very, very low economic value per kilo when that stuff moves.

**1:** That's interesting. Just one more point on that. I'm just wondering if you have come across in your waste audit, have you come across particular levels of sportswear, for example. It's something that someone else mentioned, there will seem to be a real lack of within the charity sector was the collection of sportswear. I was just wondering if you had any experience of that. Post-consumer, I'm talking about now.

**2:** The collection of it or the ability to do anything with that?

**1:** No, the collection of it. The appearance of it within the collected waste as a particular fraction of that waste, but perhaps it's just never been really looked at. I was just wondering if you noted anything on that at all.

**2:** I think that really is dependent on where the waste came from and how much of that type of garment is in it. If you go to the state of California with their suburban soccer moms [crosstalk] but you're going to see a whole lot of that material come in through donation bins, or because people potentially are a little bit more conscious about-- I'm not saying they are or they aren't, but if it's an item that has been completely worn out, there is a chance that people are just taking it. They're not actually putting it in a donation bin because they perceive it as something that has no reuse value.

What I mean, there's two potential variables. One is people are self-selecting and saying, "this is too ratty, it can't go into the donation bin", or there just isn't a large prevalence of that type of item in whatever the collection region is.

**1:** Just moving on to the next question. You talked a bit about this already, but maybe if you could draw out the main barriers to a circular system for synthetics.

**2:** Price, price, price, price, price, price, price, price.

**1:** That's pretty clear. If price is at the top-top, what else do you see as being particularly important?

**2:** I think we're in a moment where we're going to see the technologies that can actually chemically recycle polyester. I think they're about to make a leap forward. The cotton, chemical cellulosic recycling technology. The likes of Renewcell and competitors. They're making a big leap forward. They did in the last 12 months. Renewcell got their product to market. There's a bunch of other stuff coming in. I see technologies that will handle pure polyester or really polyester rich, those chemical recycling technologies are right on the heels of that in terms of technical viability.

Even the technologies that will handle the blends, I think they've made some good progress and they're ones that I'm keeping an eye on to see how quickly they progress in the coming year. I think the technology is not going to be such a significant barrier. In the fairly near term I think there's enough polyester that exists. Even on the post-consumer stream, it's blended. There is enough pure polyester in pockets. I think they'll be able to figure out the feedstock piece as well. I think the

Interview date: 09 06 2020

performance of the recycled output, I think it will probably also be adequate. I think the economics are just really going to be a big barrier.

**1:** That's interesting. That was a really nice summary actually. Thank you.

**2:** I would say feedstocks are probably going to be on the heels of that in terms of what are the potential barriers, but I would put feedstock development and technology development on the same level. I see those two things as developing one another actually. That's what's happening in in the chemical cellulosic space, and I believe that's what will happen in the polyester space as well.

**1:** That's really interesting. Thank you. Moving on to something more positive. Where do you think the opportunities lie for achieving circular synthetic textiles, and in what time frame? You just spoke a little bit about what needs to happen and you were fairly positive about that, which is brilliant. What kind of timeframe do you see this happening in and what are the specific opportunities do you think within that?

**2:** Anybody's guess on timeframe, we are in a whole new world. We'll blame the germ apocalypse because nobody knows. The strength and focus of the brands and retailers who really have the market pull at their fingertips, with the decisions that they make, in terms of their fiber portfolios, will have a lot of impact on how things go and how things develop, showing that market pull is really important. I think the thing that's overlooked a lot, and this is one of my not yet concrete in my brain in terms of how to articulate it, it's one of those types of set of boxes.

When we talk about circularity, we still tend to think in silos and the way that linear business is done. What I mean by that is single transactions between stakeholders that are next to each other in the supply chain. Today, it's a bottle collector or a recycling facility that sells the bottles to a processing facility or recyclers themselves depending on how integrated things are. The fibers produced, the fibers goes to a spinner, the spinner does the-- all the way down the line. They're one-off transactions typically or limited-- These are not transactions or materials flows that go across multiple stakeholders.

For circularity to work, in my opinion, we need to rethink those dynamics and we need to do that differently. Meaning if a brand retailer says, "We have this collection of amazing events." They've got X, Y, Z item, synthetic item, we're going to put it into a rental and leasing model. We're going to take those items back, we're going to ensure that those items go into the front end of our recycling technology. We're going to base our buy from these different folks along the supply chain on that model. Meaning we're going to take the risk and say, "We will purchase X volume for X amount of years across these suppliers."

I think that really goes a long way to building a circular supply chain and securing those materials flows. Similarly, if you're a recycler and you're in the middle of the mix being able to go all the way back to your raw material supplier or your brand, and reaching forward and having arrangements or agreements with even down all the way through to apparel manufacturers, these sorts of longer-term longer reach business relationships. I don't see any way around that model. I don't know if that makes sense.

Interview date: 09 06 2020

**1:** It certainly does. Yes, it does. It's more systemic, isn't it? It's more about working with all of the stakeholders, not just the previous one.

**2:** It's all about time and volume and margin.

The thing that seems to have been very profitable for fashion companies in the last 20 or 30 years is high volume, you purchased, you set back one step or something, one or two steps and it changes from season to season and you may have your certain suppliers but especially things like the materials on the bomb change all the time and limited influence over that. I can't help but think about how that dynamic has to change.

The acceptance of a longer term-- Maybe that's not the right way to say that. Maybe the way to think about it is you're really trying to build the business, wherever you're at the supply chain over consistent business over a longer period of time, not necessarily higher margins in a shorter period of time.

**1:** It's a difficult set, isn't it? It requires promises if you want to invest in it.

**2:** Yes, that's the hard part, right? I also think there's this power dynamic. It's not even think. There is clearly a power dynamic between the brands' retailers and the supply chain where the brands and the retailers hold most of the cards. What I think is super exciting is the opportunities for suppliers who are doing the right thing, who, for example, want to work in clusters or along companies who are also doing the right thing that can offer up solutions and they can self-organize, they can really bring value to the table and work in a more systemic way and bring that to the brand and retailers' side.

**1:** Yes, that's right.

**2:** I see few glimmering potential examples of that and that's the most exciting for me because it does start to change that dynamic of brands and retailers call all the shots.

**1:** Yes, that's nice about that.

**2:** Well, and I think brands and retailers, just people like you and me, making those decisions and it's hard to break out of old patterns because the mandate is-- While the mandate may say on the surface to do that but if you go into an innovation team and talk about, well, this is our team and talk about all these new, cool things that could be done versus you need to go to that the buying team. You're going to have different focuses a lot of the times, so it's tricky.

**1:** That's great. Thank you. I'm just going to move on to the next question. This is the question about COVID. This is not the focus of our research but because of the timing of what we're doing, we wanted to ask all of our 2s about this. Has the situation arising from COVID changed the plans of your organization? Also, how do you think it will impacts on what's happening with circular materials development in the longer-term?

**2:** To the second part of your question, I would just say insert the generic response of nobody knows, some will embrace it and take circularity further. Some will back away and fall into the new business models and newer ways of working. I put on my hopeful pants. I hope that maybe after this ripple in life, we'll be able to actually use it as a catapult toward more circular practices. I think textiles and apparel and fashion are actually uniquely positioned to do that, because there was so much pressure pre-COVID to do something and so much momentum. We'll see but I'm hopeful about that one.

**1:** Great.

**2:** In terms of how it's impacted our plans, in a research and consulting world especially in this industry, you look ahead and you do your planning and and the sales processes like six to 18 months sales cycles essentially in terms of getting contracts and getting work. There's been some planning around how do you put a truly digital framework underneath the work that we do to make it more accessible, to make it more scalable?

In long-term, in the mid and long-term, all of those ambitions around making our learnings and our findings more widely available putting in digital framework-- Through digital framework, digital platform underneath all of it, and being able to scale the knowledge, that's all still there. I think the reality of the short and early mid-term is that a lot of the companies that fund the consortia that I work with, may not have budgets to do the funding. I think really the biggest impact is being more conservative about where some of the time and finances are spent until there's a little more clarity on how much work there'll be in touch for that six, 12, 18-months sales cycle.

Not feeling the impacts now thankfully but keeping an eye on what happens in six and 12 months before making any really big leaps. I also think it opens an opportunity to do more European-based collaborations because it seems as though the EU is not backing off their funding especially with the mandate for separate textile collection by 2025. They haven't yet seemed to back off on that commitment or funding the research that go into that commitment. That's exciting.

**1:** That's great. Thank you. I just want to move on now, because we're short with a bit of time, to these two examples from our case study. I'm going to post and link into the chat on here. If you could follow it and then it should take you to a Google slide. Where have I--? I have lost mine now. I know, they are. I'm just going to type into them as we talk. Just as a kind of a reference point for us to work together on these couple of things. Do you see them?

**2:** Yes.

**1:** Perfect. These two garments are a 100% polyester although probably with some elastene, leggings or exercise pants for women and then a polyester fleece and they have some zips. They both have this branding on them, which can be printed or embroidered or something like that. I just would like your perspective on what happens now with these garments.



**2:** Today, if they're no longer usable?

**1:** Yes, exactly. Well, at any point along their life cycle, I guess, that you think is relevant, net worthy.

**2:** I think in terms of re-use, it's going to just depend on how reusable they are, will depend on-- I don't really, in terms of yoga pants. I don't actually really know how reusable that item is or how many people are willing to buy those things used but of course, the reusable condition they're in and what the local end market will buy. Why I don't believe there's a strong re-use market for those but that's just anecdotal, and then shoddy at best or landfill in incineration after that. Then the fleece item, again, just the re-use market will depend on where they're at. It is not as strong of a re-use market for cold weather items, and that's borderline. That's not exactly cold weather item.

**1:** I don't [crosstalk]

**2:** If you take like heavy sweaters, heavy jumpers and winter-wear, there's a very limited re-use market. A little bit different in Europe because of Eastern Europe and I think Russia take a little more of that but large amounts of reusable clothes go to Africa and it's just not an item that's needed in Africa. The fleece, yes, I think there's probably a little better reuse market for it, again, anecdotally. Again, then if it's a 50-50 poly cotton blend, then it will go. It has a wider market but otherwise, it's shoddy.

**1:** That's interesting. No wiper. Do you know what typically happens with wipers once they've been used because presumably they have quite short life as wipers.

**2:** Yes. Typically, they go into landfills or incineration. One more cycle, and then they're going.

**1:** Do these garments represent-- Obviously because they're polyester, they don't have-- They have limited, at the moment, limited end-of-life potential, but is there anything about them which you think is noteworthy in the other side of the life-cycles, in the supply chain to do with the circularity. I don't know, maybe post-industrial waste or how they're made or manufactured that's worth mentioning. With your organization, the work that you do, what's your knowledge based around the post-use phase?

**2:** Most of my knowledge is based around the post-use space but consistently growing on the industrial side. Maybe one of the big opportunities today is that they can be made out of recycled PET, while it just used to be a fiber to begin with, and maybe a bottle source. Think about the plastic bottle waste going on out there. I think that's an interesting opportunity, to begin with. In terms of the opportunities for the post-industrial waste, if it doesn't have a lot of a elastane in it, then I think there is some recycling opportunity.

The fleece, I'm assuming again that fleece is a 100% polyester item, but if there was a cotton blend, there has been some talk about using mechanically recycled cotton as a backing yarn for fleece. As a blended item, it could already have some mechanically recycled content potential. If the elastane, the spandex is minimized

then there's more opportunities for the post-industrial waste to do something more than just go into a shoddy or a punching bag, a fiber fill application.

Some of that also, again, depends on where it's manufactured. Some of the shoddy goes into mattresses and non-wovens. If it's a higher percentage of poly, there maybe a stronger opportunity for non-woven collection besides just shoddy like other-

**1:** It's quite interesting, isn't it? Because mattresses have quite a long life but then they are incredibly difficult to recycle afterwards. If you're looking beyond the second use, the third or fourth, it's a bit of a balancing act, isn't it? As to what is the best use of the material.

**2:** Yes. No good answers.

**1:** No. Just thinking out loud. It's a difficult one, isn't it? Because you want them to be used again with the limited amount of energy used but at the same time, it has a knock-on affect, doesn't it?

**2:** Yes, tricky.

**1:** Thinking out loud. Moving onto the second slide, this is looking at the future. Ideally, what would you like to see as an improvement on the circularity of these garments? If you know, taking aside some of the most critical barriers, what would an ideal situation look like for the life-cycle of these garments?

**2:** Sorry. I'm going to just take a step back and make sure that I don't misrepresent. On the post-industrial side, there really could be some-- Oh you have it, if no elastane then post-industrial recycled opportunities. Never mind, you've got it. Moving forward then-- Oops. What can happen in the future? I would go back to the previous comments. There are technologies that are in development that dealing with elastane or aim to do with elastane.

That's really, really exciting, because if you can figure out the elastane part of the equation, it does open up a good chunk of polyester for recycling I think. Generally, if you look at recovering post-consumer materials, you have to look at recovering those things in batches. In the future, if recycling technologies for cotton, for polyester and blends of those two materials are all commercially viable then the option of circular materials and circular material resources is really huge because you can fully look at those technologies and you can keep on within a region, and we start to really open up the opportunity for regional manufacturing and truly circular materials flows.

**1:** That's nice. Co-located facilities for regional manufacturing.

**2:** Sort of like in a waste collection sortation manufacturing, that sort of thing. There's enough I saw in the world but that's crucial. Look around exactly where you are. There is more textile than you need as in that being earlier in.

**1:** It's really important we said about because in the UK, the market, the types of post-consumer waste are very different to in Eastern Europe or in China or in wherever. The regional here, it's really important, isn't it?

**2:** Yes, it is. It is and this, the idea of reusing something, and I'm sure you know but in the post-consumer world, reuse, [unintelligible 00:56:19] does fund all of the handling of post-consumer textiles but if we look at increasing the amount of waste that's diverted from landfill, I don't know if that part of equation actually has to change. If you think about it from a regional perspective, you can theoretically, if we could be right, we'd change that dynamic a little bit.

**1:** It's being able to leverage the economic balance on those to solve some of those economic problems possibly, [crosstalk].

**2:** It's more complicated than that but yes, potentially because the cost of labor kills everything but I think if you can concentrate collection, sortation, recycling in strategic areas, a high amount of human population, high population density near manufacturing hubs that already exist, that sort of stuff. There are a few sweet spots globally that I think seem to be right for a regional circular textiles-

**1:** I'm just going to add there as well because you mentioned it before but quite critical to all this with polyester is the price of virgin oil, isn't it?

**2:** Oh, yes.

**1:** I'm just going to put that one. I know that you didn't say it but you said it earlier. Yes, it seems quite important. Perfect. I'm just going to move on because we're really short on time now.

**2:** Yes, on with it.

**1:** Onto the third slide, so just the top lines, what needs to happen in the next five years, next 10 years for circular synthetics to become a real thing?

**2:** Market pull. Well, everything else the market pull because the technology has developed, as well, the recycling technology and the infrastructure to support the collection, sortation. I really do believe that market pull starts that whole cycle, because the technology is far enough to get there. It's not new, new, new, new technology that's been in development. The infrastructure, it will come with the market pull. When you develop, it needs attention but it will come with market pull.

**1:** Perfect. Anything else you want to quickly add or shall we move on?

**2:** Yes, move on.

**1:** Is there anything-

**2:** There's a lot in that but you've seen and read I'm sure all of the reports. There have been so many good reports coming out of Europe recently and a lot of them say the same things.

1: There were lots of things on the other interviews as well that we can pull too but just to get your top lines is really useful.

2: [unintelligible 00:59:17] policy, the technology is going to come to the market and the policy.

1: Perfect. Then on the final slide, I've just put up those definitions again. I'm just wondering if there's anything that springs to mind which you found needs to change or isn't in there.

2: Hang on. Give me a second here. Let me read. Hang on a second, let me just read it all. I think the only thing I would comment on is this idea of equal or higher, I don't think that is a requirement as long as the resources aren't lost. For example, if it were to go into a mattress product, if a garment, which I would consider high value would go down cycling mattress product for that mattress product to then be recycled again into monomers, polymers and fiber, I think that's okay.

I think we get caught up in this equal or higher value thing but really it's just about not losing resources from the system. Can go up, can go down, in my opinion.

**[inaudible 01:00:59]** but we can't lose the resources to waste.

1: You wouldn't want, for example, if it was going to go into a mattress but there was no plan for how that mattress would be recycled, is that a no go or is it still better than land fill?

2: I won't call that circular but I think it's important to do that to displace virgin resources. If you're looking at a definition for purely circular it's not losing waste from the system, if it goes into a down cycling application that's just going to be land filled at the end then you lose it.

1: Okay. It's like a step process, isn't it? In the medium term maybe it's okay but in the longterm you want it to be recovered again.

2: Yes. My comment simply is that equal or higher value gives a certain impression that if it doesn't go directly back into a garment, for example, it's not circular but I don't think that's the case. Especially with polymers, it really depends on what the packaging market does, for example, and the cost of recovery for food grade, plastics versus textiles, et cetera. If those polymers are recovered and able to go into a different market some people wouldn't consider that higher value but you're not losing resources from the system and maybe you're exchanging those resources in a mass balance multi-industry network. It's just the equal or higher value thing I would-  
- That always carries an asterisk for me.

1: Yes. Okay, I understand. That we purposefully didn't say 'back into fibers' for that reason, we're not assuming that it goes back into fibers but I'll rethink that and have a look at that. Thank you. Okay, perfect. Well, thank you very much for spending all this time talking to me. Some really, really useful insights.

2: No.

**1:** No, really. It's fantastic to get so many different perspectives on the same thing. We're asking everyone the same questions so it's really a nice way of comparing across. I will get back in touch with you if that's okay, when we have something to share that we could use your feedback on, if that's okay.

**2:** Sounds great. I'll let you go. Thanks very much for your time.

**1:** Okay. Thank you very much, Tracy. Bye bye. Have a good day.

**2:** Bye.

**[END OF AUDIO]**